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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/551,339 | 09/14/2006 | Ilias Manettas | 2003P00537WOUS | 4621 |

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BSH HOME APPLIANCES CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
100 BOSCH BOULEVARD
NEW BERN, NC 28562

| EXAMINER | |
|---|---|
| COX, ALEXIS K | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3744 | |

| NOTIFICATION DATE | DELIVERY MODE |
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| 09/02/2009 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

NBN-IntelProp@bshg.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/551,339 | MANETTAS ET AL. | |
| | Examiner | Art Unit | |
| | ALEXIS K. COX | 3744 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 June 2009*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *11-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/18/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11, 15-18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Tilmanis (US Patent No. 3,839,878).

Regarding claims 11, 15, and 16, Tilmanis discloses a refrigeration device, comprising a thermally insulating housing (10, see column 3 line 53, see also figure 1) enclosing an inner chamber (14, see column 3 lines 54-55) and an evaporator arranged in said housing (18, see column 3 lines 59-60) separated from the inner chamber, the evaporator being in an air passage separated from and communicating with the inner chamber, as without the air passage the inner chamber would not be cooled by the evaporator; a pair of temperature sensors (36, 38, see column 4 line 10) placed in the vicinity of the evaporator such that for a given thickness of the ice layer only one of the temperature sensors is embedded in the ice layer (see column 4 lines 17-19), the temperature sensors constituting a measuring device arranged in the air passage to provide a measured signal representative of the air flow through the air passage; a heating device for heating the evaporator (see column 3 lines 63-65); and a monitoring and control circuit connected to the pair of temperature sensors (see column 4 lines 30-41) which determines the difference between the temperature values detected by the

pair of temperature sensors and activates the heating device when the temperature difference exceeds a predetermined value (see column 4 lines 42-47).

Regarding claims 17-18, the refrigeration device of Tilmanis further has a first sensor arranged directly on the surface of the evaporator (36, see column 4 lines 17-18).

Regarding claim 20, Tilmanis discloses a refrigeration device, comprising a thermally insulating housing (10, see column 3 line 53, see also figure 1) enclosing an inner chamber (14, see column 3 lines 54-55) and an evaporator arranged in said housing (18, see column 3 lines 59-60) separated from the inner chamber, the evaporator being in an air passage separated from and communicating with the inner chamber, as without the air passage the inner chamber would not be cooled by the evaporator; a heating device for heating the evaporator (see column 3 lines 63-65); and a monitoring and control circuit (see column 4 lines 30-41) which estimates an air flow through the air passage in which the evaporator is arranged by determining the difference between the temperature values detected by a pair of temperature sensors (36, 38, see column 4 line 10) and triggers a defrosting process by activating the heating device when the temperature difference exceeds a predetermined value (see column 4 lines 42-47), which is when the estimated air flow falls below a predetermined threshold value.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tilmanis (US Patent No. 3,839,878) in view of Howland (US Patent No. 3,726,104).

Regarding claim 12, it is noted that Tilmanis does not disclose the measuring device to include a body driven to move my said air flow in said passage and a sensor to record the movement of said body indicative of air flow speed and said control circuit to determine a fall below said threshold value when air flow speed falls below said

threshold value. Howland explicitly discloses the use of a body (15, see column 3 lines 43-51) driven to move by the air flow in the passage from the evaporator to the cooled space (see figure 1) and a sensor which records the movement of the body indicative of the air flow speed and the control circuit to determine a fall below said threshold value when the recorded air flow speed falls below the threshold value (see column 3 lines 55-60), as an increase in the speed past impeller 15 will be a consequence of a decrease in air flow past the evaporator. As the systems of Tilmanis and Howland are both concerned with the proper timing of defrost operation in refrigeration systems, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the impeller of Howland for the temperature sensors of Tilmanis in order to provide an equivalent control of the defrost of the system for which it is easier to detect damage to the air flow sensor, as it is easier to detect a broken impeller than a broken temperature sensor.

7. Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tilmanis (US Patent No. 3,839,878) in view of Howland (US Patent No. 3,726,104) and Berrett et al (US Patent No. 3,716,096).

Regarding claims 13 and 21, it is noted that Tilmanis does not disclose the measuring device to include a directly displaceable elastic element which can be deflected from a rest position by said air flow in said passage and a sensor to record the deflection of said element indicative of air flow speed and said control circuit determines a fall below said threshold value when the recorded deflection falls below said threshold value. Howland explicitly discloses the use of air flow to determine defrost (15, see

column 3 lines 43-51). Berrett et al explicitly discloses the use of an elastic element which can be deflected from a rest position by air flow in a passage, combined with a position sensor and control circuit, to help control an air conditioning system for a building (32, 44, see figures 1 and 2; see also column 2 lines 64-67). It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to use the flow sensor of Berrett et al in the system of Tilmanis as taught by Howland to control defrost in a way that has less delicate electronic parts to break and is therefore is more reliable.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tilmanis (US Patent No. 3,839,878) in view of Pao (US Patent No. 4,736,594).

Regarding claim 14, it is noted that Tilmanis does not disclose the measuring device to include a pressure sensor to measure a dynamic air pressure in said passage indicative of air flow speed and said control circuit to determine a fall below the threshold value when said recorded pressure rises above said threshold value. Pao explicitly discloses the use of a pressure sensor (18, see column 5 lines 10-13) to determine air flow across the evaporator coil; indeed, when the air flow is sufficiently low, this will be detected as a high pressure drop, and will initiate defrost. As the systems of Pao and Tilmanis are both concerned with defrost control, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the pressure sensor of Pao in the system of Tilmanis for defrost control in place of the second temperature sensor of Tilmanis in order to have redundant data and error-checking in place in the system of Tilmanis.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tilmanis (US Patent No. 3,839,878) in view of Harbour (US Patent No. 3,248,894).

Regarding claim 19, it is noted that Tilmanis does not explicitly disclose the second temperature sensor to be arranged on an output of said passage. Harbour explicitly discloses the use of two temperature sensors to control defrost, with one being on the evaporator and the other being near the outlet of the evaporator air passage (66, 59, see column 3 lines 74-75 and column 4 lines 1-9). As the systems of Tilmanis and Harbour are highly similar in structure and function, it would have been obvious to one of ordinary skill in the art at the time of the invention to put the second temperature sensor of Tilmanis at the outlet of the evaporator passage, as is done by Harbour, in order to prevent false readings caused by close proximity to frozen objects.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Horey et al (US Patent Application Publication No. 2002/0104322) discloses an ice thickness sensor probe comprised of temperature sensors. Howland (US Patent No. 3,359,749) discloses a differential temperature control device for defrost control. And Wayne (US Patent No. 3,188,828) discloses a photoelectric ice detecting device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXIS K. COX whose telephone number is (571)270-5530. The examiner can normally be reached on Monday through Thursday 8:00a.m. to 5:30p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AKC/

/Frantz F. Jules/

Supervisory Patent Examiner, Art Unit 3744